

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Rocky Branch

Waterbody Segment at a Glance:

County: Clay
Nearby Cities: Smithville
Length of impairment: 0.4 miles
Pollutants: Biochemical Oxygen Demand (BOD)
Source: Kansas City Rocky Branch Wastewater Treatment Plant (WWTP)



State map showing location of watershed

Note: The current assessment of this stream is 2.2 miles impaired due to BOD and Ammonia. This assessment is based on data not available at the time of the formation of the 2002 303(d) list.

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Rocky Branch

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- The Missouri Water Quality Standards (WQS), found in 10 CSR 20-7.031 Table A, for Dissolved Oxygen (DO) (related to BOD) in streams is 5.0 mg/L (milligrams per liter or parts per million). A value less than 5 mg/L is allowable if it represents the normal “background” condition of a stream.
- The standards for Ammonia vary with water temperature and pH. The permit includes seasonal limits for Ammonia of 1.2 mg/L in summer and 2.3 mg/L in winter.

Background Information and Water Quality Data

Rocky Branch was added to the 2002 303(d) list due to high BOD observed in 1994 and 1999 just downstream of the Kansas City Rocky Branch WWTP. Wastewater high in BOD reduces the amount of dissolved oxygen in the stream's water. Most aquatic organisms require high levels of oxygen to survive. Water quality studies of Rocky Branch and the stream into which it flows, Wilkerson Creek, were conducted on August 1-2, 2001 and August 21-22, 2001. These assessments also revealed violations of the WQ for ammonia.

Like all wastewater discharges in Missouri, the Kansas City Rocky Branch WWTP must meet the requirements of a discharge permit issued by the Missouri Department of Natural Resources. The department placed the WWTP's permit modification on public notice in February 2004 with limits designed to protect the water quality of the receiving stream. The construction of the new WWTP was completed September 30, 2005. The conversion of the old plant for anaerobic digestion is scheduled for completion in March 2006. Data from the new WWTP's discharge and instream monitoring for the month of October 2005, indicates the plant is currently meeting WQS for DO and Ammonia. The department submitted the permit in lieu of a TMDL to the U.S. Environmental Protection Agency for approval Nov. 30, 2005.

The tables below show the data for August 2001 and October 2005, with the accompanying map on the following page.

Summary of Water Quality Studies on Rocky Branch and Wilkerson Creek by the Department of Natural Resources, August 2001					
Site Description	Flow (cfs)	Water Temp (C)	pH	Ammonia (mg/L)	Mean Early Morning Dissolved Oxygen (mg/L)
Wilkerson Creek upstream of Rocky Branch	0.90	25	7.8	0.04	5.3
Rocky Branch 0.3 miles upstream of KC Rocky Branch WWTP (Site #1)	0.33	24	7.7	0.04	5.5
KC Rocky Branch WWTP Outfall 001 Effluent (Site #2)	1.26	22	7.5	13.05	6.4
RB WWTP Lagoon Outfall (Site #3)	0.50	27	9.0	7.26	7.6
Rocky Branch 0.6 miles downstream of KC Rocky Branch WWTP (Site #4)	1.30	25	7.5	3.69	2.6
Tributary to Rocky Branch at Amory Road (Site #5)	0.10	24	7.8	0.04	5.4
Wilkerson Creek at Hwy 92, 3.2 miles from Rocky Branch WWTP	3.20	25	7.9	0.12	4.6

Source: Department of Natural Resources (Readings in bold do not meet water quality standards)

Rocky Branch October 2005 Data

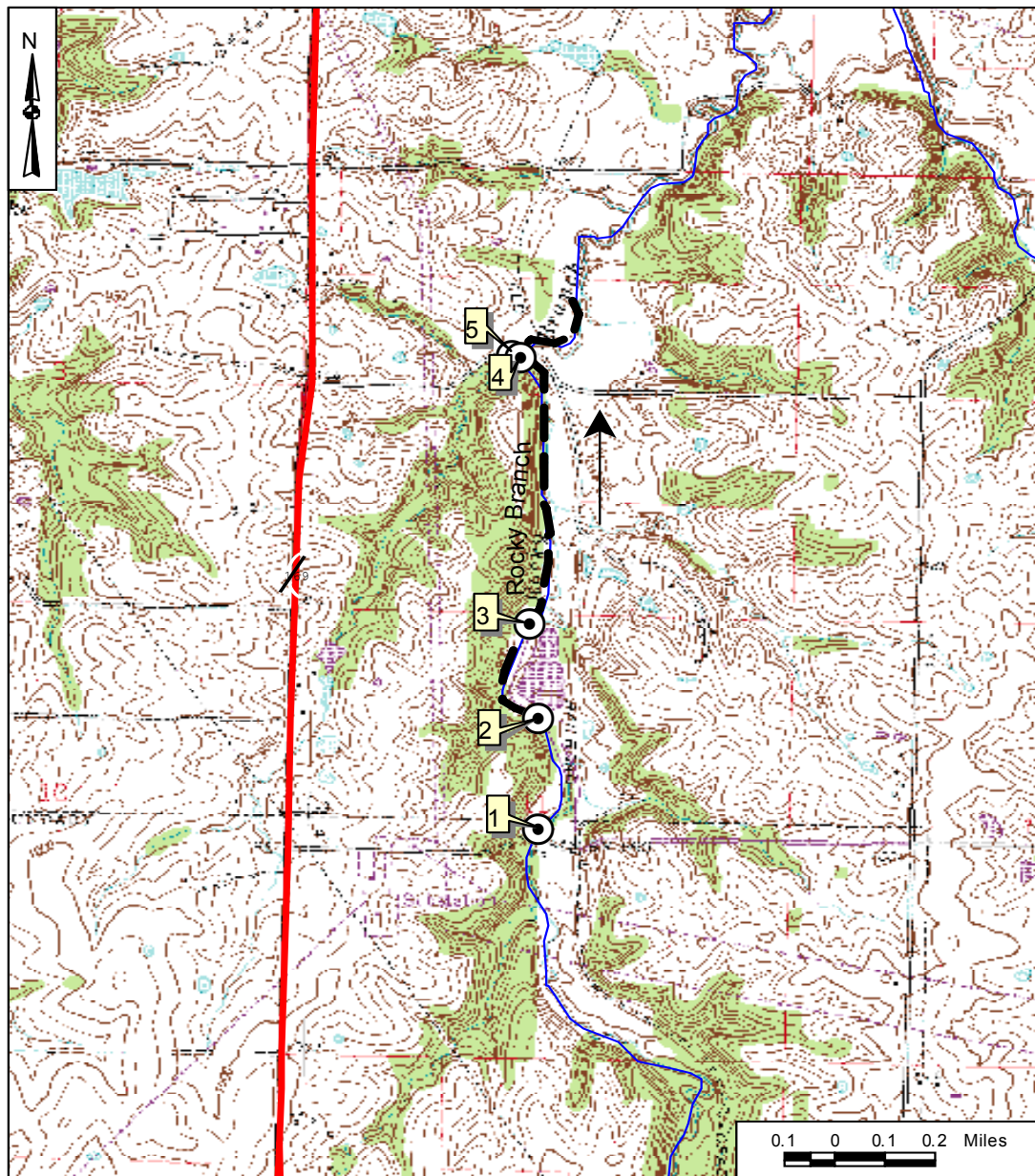
DAY	SAMPLE LOC	BOD mg/L	TSS mg/L	NH3 mg/L	Temp°F	pH	DO mg/L
10/4/05	raw	110	300	16			
10/11/05	raw	220	360	23			
10/12/05	raw	130	320	23			
10/13/05	raw	160	190	27			
10/14/05	raw	270	430	39			
10/17/05	raw	360	220	33			
10/18/05	raw	130	190	31			
10/04/05	New Outfall 003	3	21	0.24			
10/10/05	New Outfall 003	2	2	0.27			
10/11/05	New Outfall 003	3	8	0.4			
10/12/05	New Outfall 003	2	1	0.31			
10/13/05	New Outfall 003	2	5	0.22			
10/14/05	New Outfall 003	5	8	0.3			
10/17/05	New Outfall 003	9	4	0.66			
10/18/05	New Outfall 003	2	5	0.57			
10/11/05	s1 (downstream)			0.35	70	7.3	7.8
10/18/05	s1 (downstream)			0.54	68	7.5	6.3
10/11/05	su (upstream)			0.31	70	7.3	8
10/18/05	su (upstream)			0.1	70	7	8.6

Source: City of Kansas City

Site Index to Map on Next Page

- 1 – Rocky Branch upstream of KC WWTP
- 2 – KC Rocky Branch WWTP, Outfall 001
- 3 – KC Rocky Branch WWTP lagoon outfall
- 4 – Rocky Branch at Amory Road, 0.6 mile below WWTP
- 5 – Unnamed tributary to Rocky Branch at Amory Road

Impaired Segment of Rocky Branch, Clay County, Missouri, Showing Sampling Sites



— — — — Impaired segment —————> Direction of flow

For more information call or write:

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Water Protection Program

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Program Home Page: <http://www.dnr.mo.gov/env/wpp/wp-index.html>